



International Society for Nutraceuticals and Functional Foods

ISNFF Newsletter

Volume 16, Issue 1

July 2023

<https://www.isnff.org/>

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MESSAGE FROM THE ISNFF

Greetings and our best wishes in the mid-year. We hope you are enjoying good health and cheer. As we look to the changing of the seasons and resuming post-pandemic travel, please do not forget to add the ISNFF 2023 conference to your travel schedule.



The ISNFF meeting is a great opportunity to reconnect with the scientific community and exchange ideas about nutraceuticals, functional foods and dietary supplements. A special symposium will recognize the lifetime contributions and services of Professor Chi-Tang Ho of Rutgers University to the society and fields of Food Chemistry, Nutraceuticals, and Functional foods.

The upcoming conference will be held in Honolulu, Hawaii on December 10-14. The conference venue is the Sheraton Princess Kaiulani Hotel, which is conveniently located in the vicinity of Waikiki Beach. The abstract submission site is now open on the ISNFF website. There is still time to prepare and submit abstracts – as the **Abstract submission deadline has been extended to August 1, 2023**. Other key dates to keep on your calendar are the **early-bird registration rate deadline of Aug 10th** and a regular registration deadline of October 6, 2023.

Please read further in the newsletter to see more details about the conference venue and area attractions. Also, bookmark our webpage to keep up to date as the conference details are finalized - <https://www.isnff.org/>.

We look forward to meeting you in Honolulu!

Sincerely yours,

Dr. Fereidoon Shahidi (Principal Founder and Executive Board Member of ISNFF)
Dr. Bradley Bolling (ISNFF Chair)



SCIENTIFIC REVIEW ARTICLES

Dietary proanthocyanidins and gut health



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Proanthocyanidins (PACs), also referred to as condensed tannins, are phenolic polymers mainly composed of flavan-3-ol subunits. The structural characteristics of PACs including hydroxylation patterns, stereoscopic configurations, interflavan-3-ol linkages, and substituents (e.g. galloylation and glycosylation), contribute to their diverse and complex nature. Besides, the complexity of PACs structures increases significantly with higher degree of polymerization (DP) [1, 2].

Foods sources rich in PACs such as grape seed, green tea, berries have attracted attention due to their potential health benefits via modulating various detrimental processes in the body, such as inflammation, cancer, cardiovascular, immune responses. These effects are attributed to both the direct effects of PACs on the gut microbiome and the indirect impacts from PAC metabolites [3]. Grape seed serves as a classic example of a rich source of PACs with a varying range of DP and complexity. Evidence from epidemiological and human intervention studies support the functional role of grape seed in promoting health through anti-inflammatory, antioxidant, antibacterial, antiviral, and anti-allergic mechanisms [4].

Notably, PACs also improve gastrointestinal physiological function [5]. In brief, PACs and their metabolites (1) modulate intestinal redox and immune homeostasis by increasing antioxidant enzyme activity and reducing pro-inflammatory mediators, such as TNF- α and IL-1 β , as well as the associated immune cell infiltration and antibacterial activity [6, 7]; (2) enhance gut epithelial barrier function by remodelling tight junctions [8]; (3) affect the digestion, absorption, and bioavailability of carbohydrates, proteins, and lipids by direct interactions or inhibiting enzymes and transporters in the gastrointestinal tract [5]; (4) exhibit prebiotic-like activity and promote the diversity of the intestinal microflora [9, 10]. It is worth noting that the structural properties of PACs, particularly polymer size, play a critical role in determining the bioavailability and subsequent pharmacological effects of PACs [11, 12].

Despite the remarkable potential of PACs in promoting health, there remains challenges such as low extraction efficiency and compositional complexity, poor bioavailability, lack of robust analytical tools, as well as limited clinical evidence.

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Challenges of using nutraceuticals in gummy applications



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Nutraceutical gummies were brought into the market in the 1990s to provide an alternative, more appealing supplement delivery method. The industry has adopted diverse strategies to appeal to health-conscious consumers by using alternative sweeteners and adding vitamins, minerals, prebiotics, probiotics, and other nutraceutical ingredients [1–3]. Although the manufacturing process of nutraceutical gummies is similar to that of gummy confections, formulation and quality control of nutraceutical gummies may be challenging without a thorough understanding of complex food interactions and phase behaviors within a gummy system. The network structure is essential to the texture [4], flavor release [5], and oral release of active ingredients [6].

As a sugar confection and nutraceutical delivery vehicle, gummies generally contain 6-10% gelatin, 15-20% water, up to 80% bulk sweeteners, and less than 2% food acids, flavors, and coloring. A secondary hydrocolloid is sometimes added to modify the texture [7]. In such a viscous high-sugar, low-moisture multicomponent system, the gelling behaviors of gelatin are substantially altered by the secondary hydrocolloid, sweeteners, acids, and particularly the high viscosity, which all contributed to the viscoelastic and adhesive texture of products. For example, sugars enhance gelatin gelation, but too much sugar might inhibit the molecular mobility of gelatin molecules, resulting in a lack of elasticity and cohesiveness [8]. Acids and heat can cause partial hydrolysis of gelatin and thus hinder gelation. However, in gummies, the bulk sweeteners significantly enhanced the thermal stability of gelatin, and the addition of citric acid was found to promote gel development instead [9]. Previous findings based on high-moisture gelatin gels may not be translated to gummy systems, leaving more technical challenges to overcome the molecular interactions and viscosity-involved structure-property relationships in gummy applications.

Many varieties of advanced gummy applications infused with vitamins, minerals, and phytochemicals are now widely available. Still, shelf-life stability is one of the significant challenges these products encounter. First, melting and structure collapse may occur over time, especially at higher ambient temperatures; therefore, formulations with elevated melting temperatures are preferred. Second, sucrose or other sugars with relatively low solubility (e.g., arabinose and isomaltulose) may crystallize during processing or storage, resulting in case-hardening, graining, stickiness, and flavor loss, for which the selection of sugars and doctoring agents (e.g., glucose syrups) becomes critical. It is noted that the type and dosage of sweeteners significantly affect the organoleptic properties of products [2, 10]. Third, adding active compounds, e.g., multivitamins and mineral blends, may negatively affect the gelling properties of gummies. An early study pointed out that salts could promote the phase separation between gelatin and polymers in glucose syrups, which can cause problems of nongelation and cloudiness [11], and further work is required to guide troubleshooting in practical applications.



Lastly, many active compounds are not chemically stable, so it is hard to guarantee proper delivery and absorption to the target site. Recent studies have been done to determine the absorption of gummy vitamins compared to tablets or capsules [12, 13] and to achieve greater stability against gastrointestinal digestion [14]. More work in the area of food chemistry, engineering, health, and nutrition should be encouraged to improve product quality for health promotion. Readers are encouraged to refer to a recent review regarding industrial aspects and projections of sugar confectionery for health-conscious consumers [15].

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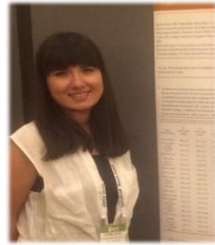
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The Valorisation Potential of Hazelnut By-Products: Transforming Waste Into Functional Food Ingredients



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Hazelnut ranks among the most consumed nuts worldwide, and the market offers a wide range of hazelnut-based food products. However, the processing of hazelnuts generates substantial amounts of by-products and waste. The valuable by-products of the hazelnut industry include the shell, skin, and meal, which are abundant in bioactive compounds, protein, dietary fibre, mono- and polyunsaturated fatty acids, vitamins, minerals, phytosterols, and squalene [1,2].

Currently, hazelnut by-products are predominantly limited to supplementing animal feed with hazelnut meal and skin and using the shells as a low-value heat source. Nonetheless, disposing of these by-products or merely using them for animal feed supplementation or as a low-value heat source leads to significant waste of a natural resource abundant in nutritional components. Consequently, there has been growing interest among scientists, producers, and consumers in exploring the potential of valorising hazelnut by-products as bioactive ingredients in various fields such as food, pharmaceuticals, and cosmetics [3].

In light of the above, a research strategy has been developed to investigate the potential valorisation of hazelnut by-products. We recently reviewed the valorisation potential of hazelnut by-products and identified strategies to transform by-products into forms more appealing for human consumption [4]. An example approach is the hydrolysis of hazelnut meal. Subsequently, we investigated the anti-obesity and antioxidant properties of protein hydrolysates derived from hazelnut meals [5]. The study examined the impact of a microfluidization pretreatment process and the effects of different enzymes and their combinations on hazelnut meal [5]. The results of this study revealed the presence of bioactive compounds in hazelnut meal, which present promising opportunities for the economic valorisation of this by-product. However, specialised protein processing parameters should be employed based on the desired properties of the bioactive proteins. The hazelnut meal-derived protein hydrolysates have the potential to serve as functional food ingredients, effectively combating obesity and combating harmful free radicals in the body.



The same group conducted another study to investigate the protein-phenolic interactions between hazelnut meal proteins and hazelnut skin phenolics using the fluorescence quenching method [6]. This study aimed to explore the effects of these interactions on the digestibility in the gastrointestinal tract of proteins and phenolics individually when using hazelnut skins as a potential functional food ingredient along with hazelnut meal proteins, providing novel insights into this area of research [6]. The interaction between hazelnut protein and phenolic extract exhibited static quenching, primarily driven by hydrogen bonding and van der Waals forces, with a spontaneous reaction. The digestibility of dephenolised proteins was not affected by skin extracts, but dephenolisation reduced hydrolysis by pancreatin. The formation of protein-polyphenol complexes had a positive impact on the bioaccessibility of hazelnut skin polyphenols, particularly the gallolated form of catechins such as gallic catechin gallate and epigallocatechin gallate. The study of phenolics and plant-based proteins isolated from natural sources has gained importance in recent years, especially in vegan formulations like foam-like products and emulsions, where protein functionality is crucial. However, there is no consensus on whether protein-phenolic interactions positively or negatively affect the bioavailability of phenols upon consumption. Therefore, more research is needed to provide further insights on this topic and contribute to the existing literature.

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2023 ISNFF CONFERENCE & EXHIBITION



ISNFF 2023
15th International Conference and Exhibition on
Nutraceuticals and Functional Foods

December 10-13, 2023
Honolulu, Hawaii, USA

Important Dates

Registration/abstract submission opens: March 1, 2023

Abstract submission deadline: August 1, 2023

Early-bird registration deadline: August 10, 2023

Regular registration deadline: October 6, 2023

Exhibitor registration deadline: September 11, 2023

Exhibition & Sponsorship Information

Exhibition spots are still available.

The exhibitor prospectus available on the ISNFF Conference [Website](#)

Conference sponsorships are available.

Opportunities for sponsorships include luncheon / speakers



CONFERENCE TOPICS

SPECIAL SYMPOSIUM:

*This main symposium recognizes the lifetime contributions and services of **Professor Chi-Tang Ho** of Rutgers University to the discipline of Food Chemistry, Nutraceuticals, and Functional Foods and the ISNFF. All colleagues and friends are invited to participate and contribute to this important event.*

SOURCES & PRODUCTS

- Fermented Foods and Beverages
- Fruits and Vegetables
- Botanicals, Herbals, and Extract Supplements
- Marine Products
- Tea, Coffee, and Cocoa
- Soy and Legumes, Other Seeds and Spices
- Cannabis & Cannabinoids in Food, Beverages & Supplements

FOOD BIOACTIVES

- Human Studies of Food Bioactives
- Bioactive Amino Acids, Peptides, and Proteins
- Functional Carbohydrates
- Functional Lipids
- Carotenoids and Other Natural Pigments
- Polyphenols
- Sulphur Compounds
- Probiotics, Prebiotics, Postbiotics, and gut microbiota
- Vitamins and Minerals

FUNCTIONS & MECHANISMS

- Gastrointestinal Health and Diseases
- Anti-inflammation
- Allergy and Immune Modulation
- Metabolic Syndrome, Obesity and Diabetes
- Cardiovascular Health • Brain, Skin, and Bone Health
- Muscle Atrophy and Locomotive Syndrome
- Cancer Chemoprevention
- Nutritional Regulation of Epigenetics
- Antioxidant and Redox Regulation
- Food Factors and their Molecular Targets
- Chronobiology and Nutrition/Food
- Exosome and MicroRNA
- Autophagy
- Hormesis

OTHER TOPICS

- Omic Technologies (Metabolomics, Lipidomics, Proteomics) and other Analytical Methods, including in silico and molecular modeling
- Biomarkers
- Epidemiology
- Taste, Olfaction, and Sensory Aspects
- R&D of Functional Foods, Nutraceuticals, and Dietary Supplements



Plenary and Honorary Speakers (Partial list):

Dr. Chi-Tang Ho (USA): Food Bioactives and their Metabolites

Dr. Grant Pierce (Canada): Making the Case for Flaxseed as an Ideal Dietary Supplement

Dr. Kenji Sato (Japan): Bioactive Peptides in Food: High Activity upon Digestion but Low Bioavailability – Why?

Dr. You-Jin Jeon (Korea): Application of Fish Processing By-products in Human Muscle Growth Functional Ingredients to Protect against Sarcopenia

Dr. Bo Jiang (China): New Non-reducing Dextrin Inhibits Maillard Reaction and Protects Drugs

Dr. Keith Cadwallader (USA): Flavour Challenges in Functional Foods

Dr. Chin-Kun Wang (Taiwan): Black Raspberry Improves Helicobacter Pylori Infection and Alzheimer Disease

Mr. Chris Kruger (USA): Fraudsters Beware: Orthogonal Analytic Approaches to Prevent Adulteration of Nutraceuticals

Dr. Colin Barrow (Australia): Sustainable Bioproducts to Promote a Circular Economy

ISNFF 2023 AWARDS, SCHOLARSHIPS, AND STUDENT COMPETITIONS

AWARDS

ISNFF Merit Award: contributions to the field of functional foods and service to the ISNFF

ISNFF Fellow Award: outstanding and extraordinary qualifications and experience for overall contributions in the field of functional foods and nutraceuticals

Industry Merit Award: Awarded for contribution to **innovative products or services**

SCHOLARSHIP

Fereidoon Shahidi Scholarship: Awarded to an outstanding graduate student. Please send letter of nomination and student CV to the ISNFF Secretary at ISNFFsecretary@gmail.com. Entries should be received by November 15th, 2023.

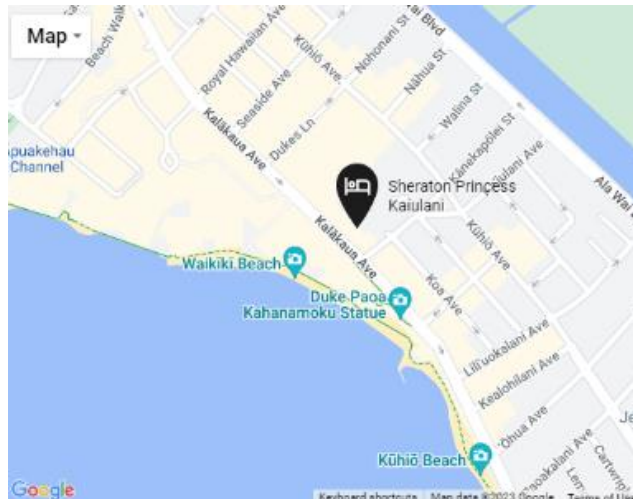
Yong Scientist Recognition: Awarded for the first time to an innovative scientist within 10 years of graduation.

STUDENT COMPETITIONS

Flash talk competition: Abstracts for both oral and poster presentation by students will be reviewed by a panel and some will be invited to also deliver a three-minute flash presentation followed by a 2 min Q/A. Awards will be presented to the top three winners.



VENUE AND TOURISM INFORMATION



The conference and exhibition will be held at **Sheraton Princess Kaiulani Hotel** located at 120 Kaiulani Avenue, Honolulu, HI 96815, USA (Phone: +1 808-922-5811).

We have a limited number of rooms reserved for the conference, which are available on a first-come-first served basis. Please reserve your room as soon as possible.

For reservations, please make sure you mention 'ISNFF' to take advantage of the special rates, while our room allocation is still available.

The Sheraton Princess Kaiulani is just a crosswalk away from the world-famous Waikiki Beach

More information about the hotel is available here:

<https://www.marriott.com/en-us/hotels/hnlks-sheraton-princess-kaiulani/overview/>

There are many activities to enjoy in the area. Whether you like city tourism, historical sites, beaches, or hiking, you can plan your stay in advance:

<https://www.gohawaii.com/islands/oahu/regions/honolulu>



VISA INFORMATION

The venue is located in the United States, so international travellers may require a visa. Please check current travel requirements here: <https://travel.state.gov/content/travel/en/us-visas.html>

Any travellers requiring invitation letters from ISNFF should contact the ISNFF Secretary at ISNFFsecretary@gmail.com

TRAVEL INFORMATION

Getting to the venue

The venue is in Honolulu, Oahu Island and 11 miles from the Daniel K. Inouye International Airport (HNL). You can take a taxi or pre-arrange a hotel shuttle for a \$20 fee by calling 1-888-229-7770 or [booking online here](#). Advanced reservations for shuttles are highly recommended.

- *If you are not renting a car, your options for getting to/from the airport are [TheBus](#), airport shuttle/taxi, or rideshare (Uber or Lyft).*
- *Most convenient will likely be rideshare. Pick up for Terminal 1 is on the departures level at the center median across from Lobby 2. For Terminal 2 pickups, meet your driver on the departures level at the center median across from Lobby 5/6 and across from Lobby 8 (check your app for updates to location pickups)*
- *Airport Shuttles and taxis typically offer a flat rate to Waikiki, usually around \$40-65 (~\$25 if you use a shared shuttle option) depending on the company, but the rates are usually higher than rideshare (depending on the Rideshare surge price at your pick up time)*
 - <https://www.airportshuttlehawaii.com/oahu-shuttle/rates-and-terms/>
 - <https://charleystaxi.com/services/airport/>
 - <https://honoluluairporttransfer.com/honolulu-airport-transfer-rates/>
 - <https://flyshuttlehawaii.com/book-shuttle/>



CONFERENCE REGISTRATION FORM



**Sheraton Princess Kaiulani Hotel
December 10-13, 2023
Honolulu, Hawaii, USA**

First Name: _____ Middle Name: _____
 Family Name: _____ (Dr., Mr., Ms.): _____
 *Affiliation: _____
 Address: _____
 Email: _____ Tel: _____

Categories	Until August 10, 2023	After August 10, 2023
<input type="checkbox"/> Member	\$495	\$575
<input type="checkbox"/> Non-member	\$575	\$645
<input type="checkbox"/> Student member	\$225	\$275
<input type="checkbox"/> Student non-member	\$275	\$325
<input type="checkbox"/> Accompanying person	\$100	\$100
<input type="checkbox"/> Exhibitor (Full Booth)	\$2,000 - 2 complimentary registrations	
<input type="checkbox"/> Exhibitor (Table Top)	\$1,000 - 1 complimentary registration	
<input type="checkbox"/> Gala Dinner	\$95	

Total amount: US \$ _____

Payment:

Certified Cheque: Payable to ISNFF
 Credit Card: VISA MASTERCARD

Credit Card #:
 CVV:
 Expiry Date:
 Card Holder:

(Please email to: ISNFFsecretary@gmail.com).

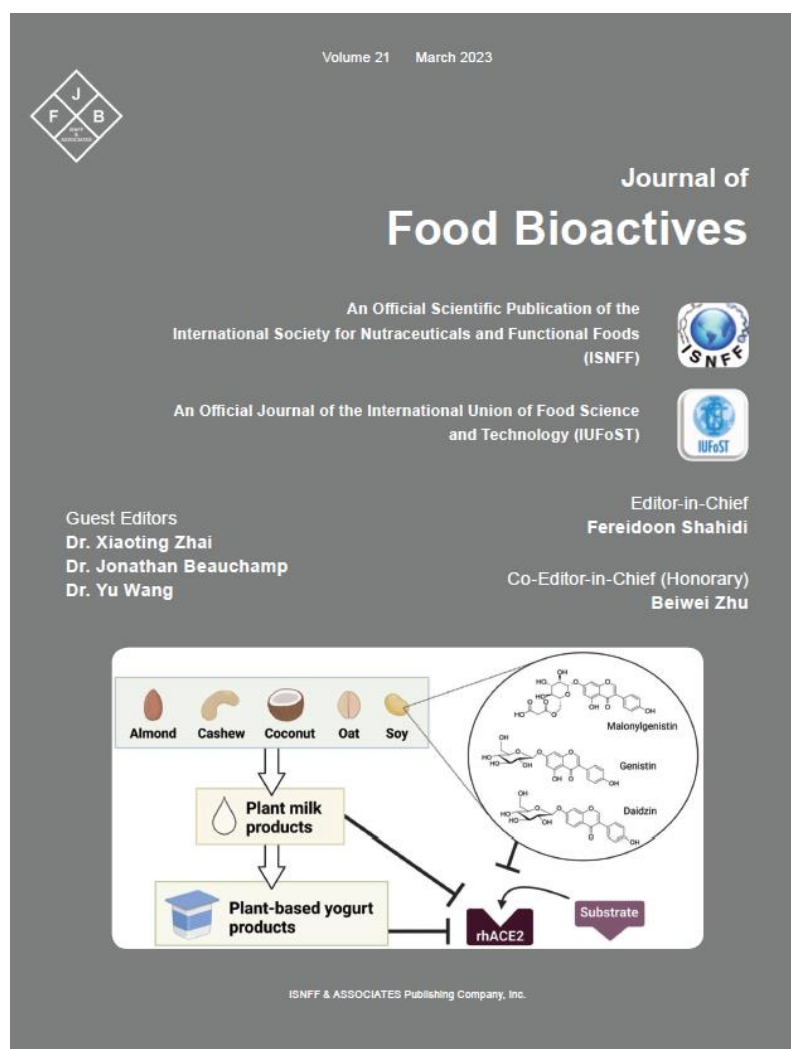
****Note to Canadian participants:
Please use a conversion rate of 1.30 and method of payment.***



UPDATES ON SOCIETY JOURNALS

The Journal of Food Bioactives (JFB), a dedicated publication of ISNFF, was launched in 2018 and has published its 22nd volume in June 2023. Please note that papers presented during ISNFF Conference and Exhibition may be submitted for publication consideration to the Journal of Food Bioactives <isnff-jfb.com>. Please note that a special issue is dedicated in the honour of Professor Chi-Tang Ho and we appreciate receiving these prior to the conference. To review the published manuscripts please refer to the journal website: <http://www.isnff-jfb.com/index.php/JFB/index>

The 23rd and 24th volume of journal is planned for September and December of 2023.



Meanwhile, the first journal of ISNFF, the Journal of Functional Foods, a collaborative effort with Elsevier was taken over by the publisher and now renamed as JFF as an open access journal.



UPCOMING NUTRACEUTICALS AND FUNCTIONAL FOODS EVENTS

2023

July 2023

3-6 XXXI International Conference on Polyphenols, Nantes, France.

16-19 IFT FIRST Annual Meeting; Chicago, Illinois, USA.

22-25 ASN Nutrition 2023, Boston, Massachusetts, USA

August 2023

13-17 American Chemical Society Fall 2023 Meeting; San Francisco, California, USA

September 2023

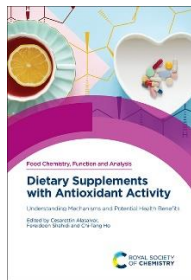
26-28 Polyphenols Applications 2023, Lisbon

December 2023

10-14 ISNFF 2023 Annual Conference & Exhibition; Honolulu, Hawaii, USA



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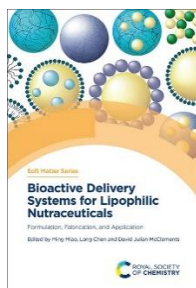


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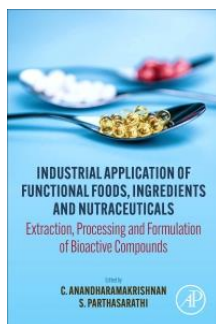


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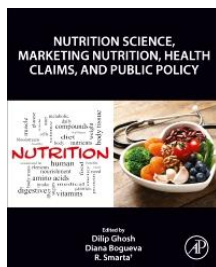
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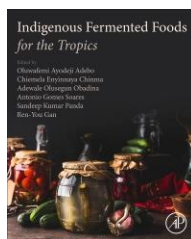


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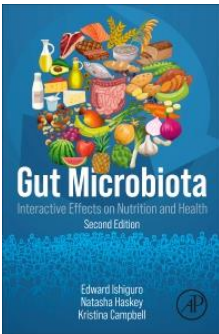
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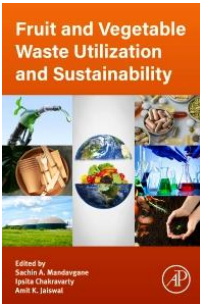
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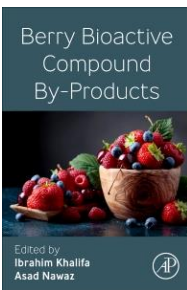


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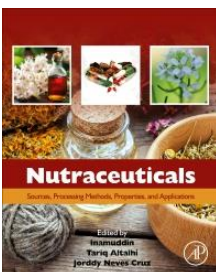


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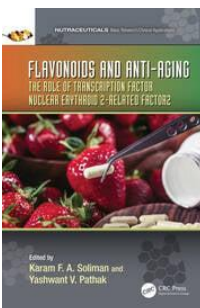
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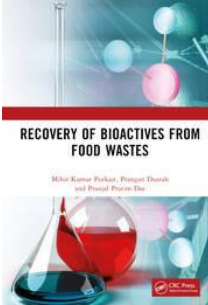
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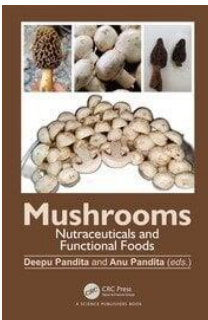
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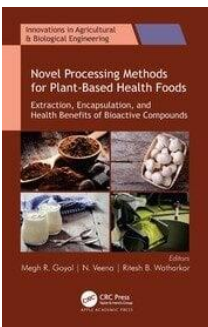
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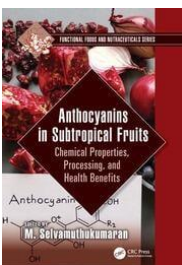
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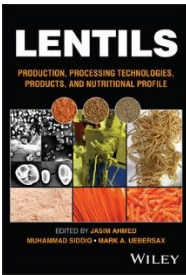
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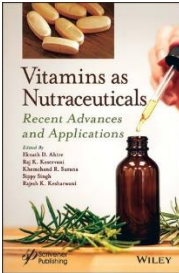


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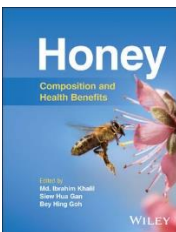


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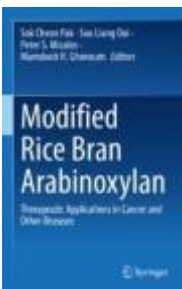


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